

DIAGNOSIS AND TESTING (Continued)

Assembled tappets can be tested with Hydraulic Tappet Leakdown Tester TOOL-6500-E or equivalent to check the leakdown rate. The leakdown rate specification is the time in seconds for the plunger to move a specified distance of its travel while under a 22.7kg (50 lb) load. Test the tappets as follows:

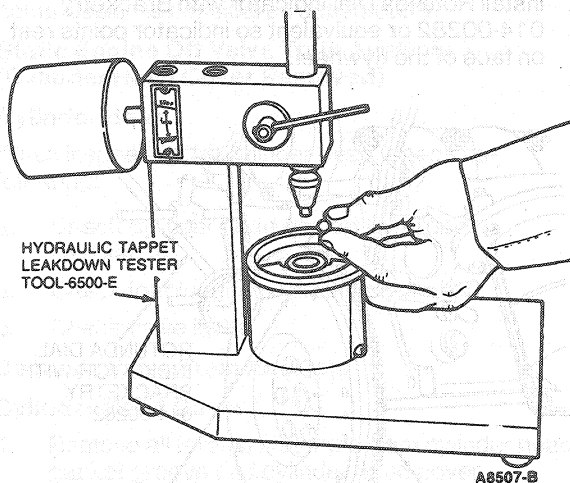
Leakdown Testing

1. Disassemble and clean the tappet to remove all traces of engine oil.

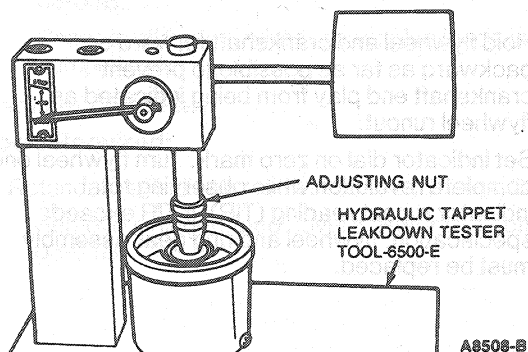
NOTE: Do not mix parts from different tappets. Parts are select-fitted and are not interchangeable.

NOTE: Tappets cannot be checked with engine oil in them. Only the testing fluid can be used.

2. Place tappet in tester, with plunger facing upward. Pour hydraulic tester fluid into cup to a level that will cover tappet assembly. The fluid can be purchased from manufacturer of tester. Using kerosene or any other fluid will not provide an accurate test.
3. Place 7.94mm (5/16 inch) steel ball provided with tester in plunger cap.



4. Adjust length of ram so pointer is 1.59mm (1/16 inch) below starting mark when ram contacts tappet plunger, to facilitate timing as pointer passes the Start Timing mark.



Use the center mark on the pointer scale as Stop Timing point instead of the original Stop Timing mark at top of scale.

5. Work tappet plunger up and down until tappet fills with fluid and all traces of air bubbles have disappeared.
6. Allow ram and weight to force tappet plunger downward. Measure exact time it takes for pointer to travel from Start Timing to the Stop Timing marks of tester.
7. A tappet that is satisfactory must have a leakdown rate (time in seconds) within minimum and maximum limits specified.
8. If tappet is not within specification, replace it with new tappet. If a worn flat tappet is replaced with a new tappet it is recommended that a new camshaft be installed. It is not necessary to disassemble and clean new tappets before testing, because oil contained in new tappets is test fluid.
9. Remove fluid from cup and bleed fluid from tappet by working plunger up and down. This step will aid in depressing tappet plungers when checking valve clearance.

Camshaft End Play**Tools Required:**

- Rotunda Dial Indicator with Bracketry 014-00282

CAUTION: Prying against the camshaft gear with the valve train load on the camshaft can break or damage the gear. Therefore, the rocker arm adjusting nuts must be backed off, or the rocker arm and shaft assembly must be loosened sufficiently to free the camshaft. After checking the camshaft end play, adjust the valve clearance.